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ABSTRACT

Integration of curriculum has been a concern of educators since before the start of the 20th century, and today middle schools are embracing a variety of approaches to integrate the curriculum. The study reported in this paper began with a review of the relevant literature, which identifies a synthesized continuum with five levels of curriculum integration: Departmentalized; Parallel; Complementary; Webbed; and Integrated Themes. The report focuses on three research questions: (1) how does curriculum integration occur according to the selected middle school interdisciplinary teams of teachers? (2) what factors facilitate curriculum integration encountered by these teams? and (3) what barriers to curriculum integration are encountered by these teams? Initially 23 teams at 5 schools in a large school district in central Florida were interviewed. Five were selected, with each team closely representing one of the five levels of curriculum integration. This report focuses on two teams corresponding to the complementary and webbed levels of integration. The sources of data collection included document collection, interviews, and participant observation. An analytic induction approach was used for data analysis, and findings are reported in a qualitative descriptive manner, citing examples and comments from teams for each research question. Conclusions are offered for each team. Members of the complementary team occasionally worked on complementary activities, but they were as likely to be working in ways characteristic of other teams: departmentally, resequenced, and occasionally webbed. For the webbed team, the primary facilitator of curriculum integration was the common planning time and the combination of teachers. (Contains 28 references.) (RR)

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A Multiple Case Study of Curriculum Integration by Selected Middle School Interdisciplinary Teams of Teachers

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Integration of curriculum has been a concern of educators since before the beginning of this century. As the close of the Twentieth Century approaches, middle schools are embracing a variety of approaches to integrate the curriculum. Organizational and programmatic changes have occurred in middle schools in the last thirty years opening the doors for curriculum innovations which are more developmentally appropriate for young adolescents, process-oriented, more relevant and "connected," delivered in an emotionally safe environment, and intellectually challenging and stimulating.

For years, prominent educators such as Bloom, Taba, and Ausubel have recommended the use of broad global themes to unify the separate pieces of information presented to students in a manner that helps them synthesize knowledge (Nielson, 1989). Vars (1991) has documented over sixty studies verifying that students in integrated programs achieve as well as or better than students in traditional subject-centered courses and yet, as students progress through the grade levels, there seems to be less and less integration of subject matter. Curriculum integration at the middle school level is considered the next

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phase in the restructuring of education for young adolescents (Beane, 1990; Brazee, 1989; Irvin & Schumacher, 1991; Toepfer, 1992).

Literature

The emergence of a "junior" edition of the high school, the 7-9 junior high school, in the early 1900s was primarily an attempt to increase retention of students in schools and to accomodate the growing student population (Popper, 1967; Toepfer, 1992). From the 1940s through the 1950s, differentiation of the junior high from the senior high curriculum emerged. This differentiation flourished supported by the increased information from young adolescent psychology. Junior high school experts had begun to criticize the inappropriateness of the discipline-based senior high curriculum for young adolescents because of its developmental and programmatic inappropriateness (Toepfer, 1992). The administration of the junior high school had become excessively inconsistent as the new knowledge on young adolescents had emerged (Popper, 1967).

But the early work to provide more developmentally appropriate programs for young adolescents and the attempts during the 1940s and the 1950s to integrate the curriculum through a core curriculum program (Faunce & Bossing, 1958) were replaced with an emphasis on science and math as pressures from the Cold War and the "space race" in the 1960s were made on educational programs. Toward the end of the 1970s, opportunities

to investigate the variety of curriculum organizational options for middle schools were rediscovered. Lounsbury and Vars (1978) reintroduced the core curriculum as part of their three tiered model of curriculum design: correlation (maintain the separateness of one subject from another, but show interrelations between the contents), fusion (merging two or three subjects by combining the content of these subjects into one), and core (shared solving of problems common to all youth through the use of multiple informational sources and the development of common competencies all must possess to function in a democratic society).

In 1982 the National Middle School Association issued a statement, which in part stated, "A 'true' middle school will evidence the following conditions or characteristics, called essential elements: A balanced curriculum based on transescent needs; varied instructional strategies; a full exploratory program; and evaluation procedures compatible with transescent needs" (p. 19). Lounsbury (1992) noted that the struggle to recreate middle level educational programs from the institutionalized junior high school had been a gradual process. In the 1970s, research revealed virtually no significant differences between junior highs and middle schools existed, but by the mid-1980s the 5-3-4 grade configuration was the most common form of school organization in the country and reforms in administrative organization and programmatic offerings were evident. However, curricular reforms within the classroom still

lagged behind (Dufour, 1990; Lounsbury, 1992).

In 1989 the Association for Supervision and Curriculum Development published a monograph, Interdisciplinary Curriculum: Design and Implementation (Jacobs, 1989) which outlined six curriculum design options: Discipline-based, Parallel Disciplines, Multidisciplinary, Interdisciplinary Units/Courses, Integrated Day and Complete Program. Jacobs suggested that these designs could be used in combination to meet the needs of the students.

Beane's provacative monograph, A Middle School Curriculum: From Rhetoric to Reality (1990) pointed out the need to devote attention specifically to the middle level curriculum. Beane suggested that a general education design would best meet the needs of all pupils. This curriculum would begin by discovering the concerns of young adolescents and the world in which they live and organizing these concerns in thematic units. The students would learn a variety of personal, social, and technical skills as well as explore the concepts of democracy, dignity, and diversity. According to Beane, this would be the whole curriculum and it would be the entire middle school program, not just a block of time inserted into the rest of the schedule (George, Stevenson, Thomason, Beane, 1992).

In 1991, looking at a broad spectrum of education, Fogarty developed ten models of curriculum integration: Fragmented, Connected, Nested, Sequenced, Shared, Webbed, Threaded, Integrated, Immersed, and Networked.

From the models developed by Faunce and Bossing (1958), Lounsbury and Vars (1978), Jacobs (1989), Beane (1990), and Fogarty (1991), a synthesized continuum with five levels of curriculum integration was developed (Irvin & Schumacher, 1991). These five levels were:

Departmentalized: This is the traditional model of separate and distinct disciplines taught in isolation from each other. Teachers plan and teach independently from one another.

Parallel: Topics or units of study are rearranged and resequenced to coincide with one another. Similar ideas are taught in concert while remaining separate subjects. The content of each subject does not necessarily change, only the timing of when it is to be studied.

Complementary: Related disciplines are brought together in a formal unit to investigate a theme or issue. Shared planning and teaching by teachers takes place in two or more disciplines in which overlapping concepts or ideas emerge as organizing elements.

Webbed: Connections, or webs, are made between curriculum contents and disciplines relative to a productive theme. Usually, all of the teachers on the interdisciplinary team work together and use the theme to sift out appropriate concepts, topics, and ideas. Each member of the team teaches from the perspective of their discipline.

Integrated Themes: Integrated themes incorporate student generated ideas rather than ideas imposed on students by teachers. The themes are based on students' personal and social concerns with the subject matter being woven into the investigation of the themes. Skills, competencies, concepts, and generalizations are taught, but within the context of the student generated areas of investigation.

As middle level educators develop an integrated curriculum specifically for young adolescents, it will be helpful for practitioners and researchers to understand how interdisciplinary teams of teachers are redefining their teaching assignments to incorporate integrated curriculum concepts in their classrooms.

Method

The methodological approach selected to conduct this sudy was naturalistic inquiry which allows the researcher to work in the natural setting of the school. When the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context, the preferred research strategy is the case study (Yin, 1989). The unit of analysis is the phenomenon which the researcher selects to understand indepth, regardless of the number of sites, participants or documents. In this study the unit of analysis is the interdisciplinary team at the complementary and webbed levels of curriculum integration on the synthesized continuum. "Subunits of separate individuals or groups are not viewed as statistically comparative nor as mutually exclusive, but as different groups who are likely to be informative about the research foci" (McMillan & Schumacher, 1989, p. 180).

Research Questions

The focus of this report is based on the following research questions:

* How does curriculum integration occur according to the selected middle school interdisciplinary teams of teachers?
* What are the facilitating factors to curriculum integration encountered by selected middle school interdisciplinary teams?
* What are the barriers to curriculum integration encountered by selected middle school interdisciplinary teams?

Subjects

Based on personal knowledge and the rough definitions of each of the five levels of curriculum integration, at least three teams at each reference point on the synthesized continuum were recommended to participate in this study by the district level middle school enhancement specialist. The recommended teams and their levels of curriculum integration were subsequently verified by a school-based administrator. Twenty-three teams at five schools in a large school district in Central Florida were initially interviewed to inform them of the study, develop a profile of their level of curriculum integration, and to ascertain willingness to participate. Only teams with four or five "academic" teachers were considered for this study.

During the initial team interview a brief presentation of the study and the five rough definitions of the synthesized continuum were presented. Each team was asked to determine what level best represented the type of curriculum integration used by the team and to describe specific examples supporting their choice. The interviews were audio recorded and later reviewed to purposefully select the five teams which most closely represented the rough definition at each of the levels of curriculum integration on the synthesized continuum to continue in the research project.

This report focuses on only two of the five interdisciplinary teams of teachers. These two teams used the method of curriculum integration most frequently described by the

initial twenty-three teams: complementary (7) and webbed (6). There were four "academic" teachers on each of these two teams.

Data Collection and Analysis

The sources for data collection included document collection, interviews, and participant observation. Each teacher was interviewed individually as well as with other team teachers. In addition to the interviews, at least three team meetings for each team were observed to generate the data for this report. Documents such as school reports and lesson plans were reviewed to validate curriculum activities.

The data analysis was conducted using an analytic induction approach. This approach involved entering the field with a rough definition and explanation of the phenomenon (in this case the two levels of complementary and webbed on the synthesized curriculum integration continuum) and modifying the definition and explanation throughout the data collection.

Findings

The School

Although the final five interdisciplinary teams were located in three different schools, the two teams of interest in this paper were from one school, Cary Middle School. Cary had 1567 students with the following categorical memberships: White 78%, Black 7%, Hispanic 11%, Asian 3%, and American Indian 1%. There had been a change in the school's demographics in three of the

areas of membership since the 1988-89 school year in which the membership was: White 87%, Black 5%, Hispanic 5%.

Cary Middle School was the recipient of the National Secondary School Recognition Program's National School of Excellence Award in the Spring of 1989 and was declared a Red Carpet School by the State's Education Commissioner for active community involvement during the 1989-90 school year. In the 1990-91 school year, a new principal, Ms. Davis was appointed at Cary Middle School.

The Bears and the Jets

The Bears. The Bears were working at the complementary level of curriculum integration on the synthesized continuum. The rough definition of complementary curriculum included: Shared planning takes place in two or more disciplines and overlapping concepts or ideas emerge as organizing elements. For a team to be considered representative of a level of curriculum integration, at least three examples of the team working at that level were minimally required. During the initial interview examples of the Bears working at the complementary level were given: the English and American history teachers were doing a biography unit for Black History Month in February; math and science were working together on the Earth Day project in which math would calculate conservation of energy and science would discuss alternative energy resources; math and English had worked on mythology with English presenting the information and math

doing calculations from worksheets provided by the English teacher; Uncle Tom's Cabin and slavery were part of an upcoming complementary unit in English and American history as were The Diary of Anne Frank and World War II.

The Bears were an eighth grade team and the team teachers were Bob, Lisa, Marie, and Ryan. Bob was the team leader with a teaching assignment of American History. Lisa's teaching assignment was Physical Science, Marie's teaching assignment was English, and Ryan's teaching assignment was mathematics. Marie had been teaching at Cary Middle School for over 20 years. This was Bob's fourth year at Cary and it was the first full-year of teaching for both Lisa and Ryan. Lisa was 31 and Ryan was 47; both had careers outside of education prior to this school year. Marie, the only African-American team member (the others were White), was 49 and Bob was 27.

The Jets. The team identified as working at a webbed level of curriculum integration on the synthesized continuum were called the Jets. During the initial interview the Jets gave the following examples of units to illustrate their work at the webbed level: Gardening, Animation, the 1992 Winter Olympics, Japan, Science Fair Projects, Endangered Species, and an Apple Carnival.

The Apple Carnival provided an example of the teachers working outside of their teaching assignments to develop a unit. The details of the Apple Carnival unit included: Students were divided into groups of interest, the science teacher helped make

apple pies and candied apples, the social studies teacher assisted students in desktop publishing and binding to produce an apple cookbook, the English teacher made homemade applesauce in Mason jars with gingham covers, country apple wreaths, country apple brooms, and apple pillows, and the math teacher assisted with cross-stitch bookmarks. All of the items produced were sold at an Apple Carnival held for the team parents and friends one Fall evening at the school by the students of the team.

The Jets' team teachers were Carl, Heidi, Kris, and Mandy and they taught seventh graders. Carl's teaching assignment was geography but he said he leaned toward it being a world issues class. Heidi's teaching assignment was life science (versus general or physical science). Kris' teaching assignment was mathematics and Mandy was assigned to teach language arts. They were all between the ages of 34 and 46, White, and three were females.

Kris and Mandy had been together on the same team for the past 8 years while this was first year membership for Carl and Heidi, although both had been on middle school interdisciplinary teams in their previous teaching experience at other schools. Mandy had 24 years of experience as a teacher and district level resource teacher/administrator. The other teachers each had approximately 10 years teaching experience.

* **How does curriculum integration occur according to the selected middle school interdisciplinary teams of teachers?**

The Bears. The Bears were scheduled to meet everyday of the week except Thursdays. The meetings were structured based on a formal agenda Bob used. Lisa kept brief notes on each team meeting. All team members contributed to the agenda if they thought something needed to be discussed, but this was usually done after Bob had finished with items on the formal agenda.

The Bears team meetings usually pertained to team administrative duties. Planning the upcoming team field trip, organizing for the intramurals, and rearranging small group advisory were topics discussed. Concerns about student achievement, parent conference scheduling, and contests were also discussed. Curriculum plans were occasionally mentioned, but no specific time was devoted to it. Plans were made during one meeting to devote the next team meeting to discuss the expanding the upcoming unit on Environmental Issues to include all of the team members. Lisa had taken primary responsibility for the organization of the unit's activities and was going to share her ideas with the group as well as discuss ideas the other members might have to contribute.

Determining the Curriculum

When asked about the prescribed curriculum, the team members said they followed the district guidelines rather closely. Bob who felt the least constrained by the district guidelines

commented, "When I came in, I felt so tied to the curriculum and after three years...it has become more and more flexible in the last couple of years...to the point where I feel I can do pretty much what I want to do. It is not that I ignore the curriculum, but to me, each teacher has his strengths and weaknesses. Each teacher has things that they are going to be more interested in and just because the county list says you have to cover these things, I don't think [everyone should]."

Marie, on the other hand said, "I pretty much follow the curriculum." Ryan said that the mathematics curriculum follows the textbook. "I go with the textbook and I add stuff that I can bring in from my experience [in the service or as a pilot] or from what I have seen that may help them."

Lisa found little formal direction of curriculum at the school site and followed the science standards closely. "There is a set of standards that the county has established and that is what I follow. There was no curriculum design like the science teachers at the beginning of the year getting together and saying, 'Let's take those standards, look at them, check out the chapters and maybe restructure or organize it to devise a curriculum in physical science.' Each teacher independently ...decides which labs, demos, and which way they are going to proceed. Being new, I focus on those standards. So at each chapter I say, 'Well, I've got eight concepts,' and I take out my demonstration books. I meet the standards by teaching them concepts and demonstrating them."

The Jets. The Jet teachers were scheduled to meet everyday except Wednesday for a team meeting, but they usually met five days a week anyway. The team meetings usually focused on curriculum planning, but issues such as student behavior, fund raising, parent conferences, and service projects were also discussed.

The team meetings for the Jets were creative excursions. The ideas for integration seemed to emanate from a spring, bubbling forth with multiple angles to every unit. Several units were being engaged in while I visited the team from early February through the beginning of April: a gardening unit, a baseball unit, and plans were being discussed for a sea voyage unit and a community awareness unit.

The team was engaged in a gardening unit when I first visited. The concept of expanding the gardening unit to incorporate the film, "Field of Dreams" was being discussed. Several ideas were being circulated: Mandy would incorporate heroes into her lessons, Kris would work with batting averages, Carl would discuss foreign-born baseball players (incorporating Latin American geography), and Kris would calculate the area, perimeter, and amount (volume) of "fertilizer" that would be collected on a small group field trips to the local cow pastures.

A few days later when I returned to another team meeting some things had changed. Mandy's focus was now more specifically baseball heroes with small groups working on projects dealing with topics such as baseball history, baseball heroes, and

fictional short stories about baseball. In addition to his original plans, Carl was now making arrangements for a field trip to a spring training baseball game in 10 days. Kris had acquired a handout from one of the team's students on how to keep score which she was going to incorporate into her lessons on ratios and percents. Each student would now be responsible for keeping score for specific innings during the game. Heidi had decided that she could follow-up on the trip to the baseball game by having the students write a paper about what they had observed using their senses, reinforcing a science skill. Heidi also volunteered not to attend the game, but instead, stayed with approximately 15 students who had chosen not to attend the game.

Determining the Curriculum

Each Jet teacher acknowledged a curriculum guideline from the county existed, but several of them mentioned the flexibility that was allowed for teacher judgements. One teacher said, "We're given the freedom to adapt a general set of objectives to meet the needs of our students." The teacher went on to say, "If you really look at the middle school philosophy, ...a rigid set of prescribed things that you will do at certain times...just doesn't fit in."

Mandy noted, "There is a county developed scope of skills that is tied into state accreditation numbers, but there is no prescribed scope and sequence of skills [in language arts]. Between schools and within schools and within the language arts

department, nothing is standardized. Thank God that has happened. It's really hard to [develop a scope and sequence], because language arts are not ends to themselves, but means to all different kinds of ends and the skills involved can be learned in so many gillion different ways. To have a set curriculum...would be counterproductive to teach[ing] English effectively."

Kris said, "I use [the curriculum frameworks] as a skeleton. I can go back to previous plans in previous years..., but it...also matters what we do as a team because each year we come up with different ideas. In math I like to make the connections [between] what's out there and the skills. So where ever I can put in the practical applications, I like to do that." She also stated, "I generally try to get in what are the most important things and I guess what I don't, go by. I try to, but...with all the teaming stuff it is hard to get it in at the prescribed time. There is a lot of flow."

The Jet team members actively exchanged curriculum ideas during their meetings. Brainstorming was a common activity and the teachers were supportive of each other's ideas: "Yeah, that would be great. And then I could bring in..." When criticisms were made of ideas, it was either an attempt to step further beyond traditional classroom assignments or an attempt to get a clear picture of what the speaker intended and the practicality of the idea being presented. Seldom was there any discussion about curriculum guidelines or pressure to complete a curriculum

requirement.

Influence of Team Members on Curriculum Integration

Wondering about the relationship between the frequency of curriculum integration on a team and the amount of influence team members would have on one another, I asked the teachers, "Who influences your curriculum decisions?" None of the teachers from either team immediately mentioned their team members. Immediate responses included other teachers in their academic department, district level subject area coordinators, former co-workers, a teacher from their high school alma mater, and personal experience. Three of the four Jets teachers and one of the four Bears teachers eventually mentioned another team member influencing their curriculum decisions.

The Bears. Lisa was the only teacher on the Bears team who mentioned another team member as an influence on her curriculum decisions. Lisa remarked that the guidance of the team leader influenced her view on curriculum planning. "The experience of the team leader, [Bob, has helped me to be complementary.] He emphasized that. Even though I don't work so much with him...it would be through his design and conversation. Whenever he sees a relationship he will throw it on the table. He will say, 'Is Ryan going to be working with you?' or 'Can we do anything to help you?' Which is nice [because] sometimes I'm looking forward to getting into my room and setting up for a lab and not thinking like that. It is not anything that I was taught in school. The

team leader has helped make connections because he has experience on a team."

The Jets. The team leader for the Jets is Kris, yet Mandy serves as the curriculum guide for the team members. Carl noted, "Mandy has been an absolute joy to work with and I'm emphasizing writing a lot more." Heidi said, "Mandy forces me to think of alternatives and other ways of doing things. You don't have to just answer questions at the end of the chapter. [My subject area] is very important to me. I love science and I think it is important that they know all of these little things, [but Mandy] jerks me up a lot of times and [says,] 'There is a different way of doing it than that. I'm getting a picture of where Mandy comes from. She's probably the most flexible. She's into totally really neat abstract things. She has a million ideas and she is not afraid to try them. She is no where as constrained by the content as I am."

Mandy noted that two of her team members influence her curriculum decisions. "Carl and I are the creators. We would stay off in LaLa Land forever if it weren't for Kris. She is my conscience. She is my checks and balances. Carl is like a soul-mate. [The creativity] just never stops. That's me with everything and that's Carl. That's his personality. We just have so much fun and we produce so well, the three of us together. Incredible."

* **What are the facilitating factors to curriculum integration encountered by selected middle school interdisciplinary teams of teachers?**

The Bears. Except for Bob, the Bears had brief comments on what were facilitating factors for integrating the curriculum.

- **Common Planning/Team Members.** "The idea of teaming. That we are on a team. It would not be possible to do without being on a team. The type of team that we have. Pretty easy going, willing to try it. Being team leader and personally wanting to do it. I don't necessarily push it but I'll say, 'Can we do this?' and most of them are so easy going they'll say, 'Okay.' and we'll do it. It's not like we have to have a philosophical battle every time."

"My team. I love my team members. We are all pretty easy going and get along really well."

- **Attitudes of Members Toward Curriculum.** "I think overall it is an exciting notion. I think that it is neat. Ultimately it will get students more involved and it will get teachers more involved with each other. I think it will ultimately make kids buy into what their own education is; take responsibility for it. I like this, instead of departmentalizing, I like the opposite trend of bringing together. I think it also makes it, if you took it to a logical end, you may be looking at more of a liberal arts, mixed education, where maybe one day I'm not a history teacher but I am a facilitator of inquirers of many different things. Maybe stressing a certain subject but not exclusively.

It reminds me of the people of Italy during the Renaissance, sitting around, learning a lot and helping the kids facilitate [learning]."

[We don't do the] "structured interdisciplinary [units] but I will always show how math is used in science; that the computations they do in [math] will work in science, but it is not usually a structured unit. [For the 'Save the Earth' unit in the middle school certification class] I'm talking about how if our garbage comes in at this rate per day, how long will it take to fill up an area the size of Florida. I'm getting used to [the 'Save the Earth' unit because I did it last year and] because I can see the mathematical implications."

"It shouldn't be [difficult to integrate math with language arts] because math uses word problems."

"I don't know how to answer that. Commonality of things, maybe. Like next 9-weeks I'm doing Anne Frank and Bob is going to be doing World War II, so I guess commonality."

- **Materials.** [Having a wealth of materials helps integrate the curriculum. I showed Bob the historical bio-poem form that I found and he is going to use it in other units.]
- **Location of Teachers.** "Bob and I actually planned to do the Black History [unit]. Since we're right next to each other, we're in and out of each other's room. We just got together in his room and planned."

For the Bears, the primary facilitating factor was their willingness to try to integrate the curriculum when overlapping

areas are identified. For Bob and Marie, another significant facilitating factor is the proximity of their rooms.

The Jets. Many facilitating factors were mentioned by the Jet team teachers. Each teacher easily discussed the facilitating factors and each of them mentioned at least two facilitating factors.

- **Common Planning Time/Team Members.** The opportunity to meet during a common planning time contributed to the successful completion of many interdisciplinary activities for the Jets.

"Teaming. That's the number one thing when you sit down...and you talk about what it is that you're doing and [someone says,] 'Oh, by the way, next week I'm studying [this]' and [someone else says,] 'Oh, well, you know I can do that..."

"I think what has helped the most is our...planning. When we are able to touch base and know what we are all studying and what we're all doing. They're such great idea people. I need that. I like to steal ideas. If they generate the ideas, I'd be glad to implement [them.] Just tell me what it is and I'll find a way to do it, but come up with these ideas. I'm not the idea person."

The team member composition and interaction was noted as a facilitating factor for the Jets. "I think that it's really important to find people that get along and that have a common...understanding or they operate the same way. That they are kid oriented and they have the same basic philosophy."

"Pretty much the relationship that all four of us have. It took a little while to figure out what was going on, but it is a very trusting environment. A very tolerant environment and we tend to come up with a lot of ideas. Probably 1000% more ideas that we could ever implement, but we're constantly trying. We're not afraid to try different things. It's mainly the atmosphere."

- **Attitudes Toward Curriculum.** The Jets mentioned flexibility and the naturally occurring overlaps that facilitated curriculum integration. Kris commented, "Luckily with math you can pretty well integrate it with everything. Like with the garden. I happened to be in area and perimeter and stuff like that. I could also, even though I haven't been there yet, doing the consumer stuff and unit pricing. I had to buy the netting and the fencing and so I'm going to be able to go back to what we did with the garden when we get to that point and use that. Math is easy to make the connections."

Kris was unique in her comment. Many of the teams I spoke to found it difficult to incorporate math in their efforts to integrate. She went on the share her concern about how difficult it might be for the science teacher to integrate with the other subject areas. "Now science may be a little more difficult. They are doing the human body. It just so happens she was in plants [when we were doing the gardening unit], but if she had been in the human body...I can see where the connection would be with the nutrients and nutrition and food, but I don't see that problem in math as much."

Whereas Carl thought, "Mathematics and English would tend to follow the lead of social studies and science. Social studies and science are issue oriented to a great extent and there is a wealth of issues."

Kris also noted, [The flexibility that we've been allowed has definitely helped me integrate with the other teachers.] "At some schools I think they are very rigorous and structured and if you don't cover this, you get in the doghouse."

Even Heidi stated a philosophical understanding which facilitated curriculum integration for her. [I think curriculum integration is important] "so that we break down the barriers between the subjects to realize that many, many things have mathematical implications, communication, language, literature, scientific implications, plus the social studies concepts."

- **Personal Attributes.** Personal attributes such as writing skills, background knowledge, and community contacts were important facilitating factors for Mandy. "Personally, for me, it's my thinking style. I'm a real global thinker. I'm real creative. I can make connections really easily. It's very easy for me to get the whole picture real quickly and I don't get trapped in details. I rely on those on my team who do to keep a check on me. I say, 'Let's do it' and at first there is this natural hesitation. I'm a 'why not' person rather than a 'why?' Kris will say, 'Well, I'm not so sure...' and then I have to step back and not be sensitive or disappointed that some of my ideas get shot down."

"Being resourceful. I'm a voracious reader..and I know where a lot of things are. I was born and reared here, so I have a lot of access to a lot of resources in the [school district.] That helps."

"There are several things [that facilitate integrating the curriculum.] It is [easy] for me to write, to write education-ease, to write objectives and to write convincing units. That is one of my functions on the team. We'll brainstorm a unit and then I'll just write it up."

The primary facilitative factors for curriculum integration for the Jets was their attitude about the value of curriculum integration, the flexiblity they felt toward the implementation of their subject area curriculum, and their ability to work together with knowledge about one another's subject.

* **What are the barriers to curriculum integration encountered by selected middle school interdisciplinary teams of teachers?**

As with each of the five teams involved in this study, at least two or three of the members on each team were more involved in curriculum integration than the other one or two members.

The Bears. The Bears predominant concern was for the lack of time available to plan.

- **Time and Administratively Assigned Duties.** "Time is a major

factor. [When the district developed the document, Curriculum Connections] it wasn't pushed that much. It was given out but then it was left up to when we had time--and forget that. What we have done is mainly things that gave been pretty easily done and that have come up and happened to be there that sparked an idea and we would go ahead and do it with them . It was easier to do [than an interdisciplinary unit] and we naturally met in an area where we could put a little bit of time into it. I think we would be more open to doing interdisciplinary units if we were given, I don't know if [the powers that be] can give it to us, but if we had more time to plan."

"I think that [complementary unit planning] is more effective for our group. I feel that it would be unrealistic and therefore it would be watered-down if we were to plan an interdisciplinary unit each 9-weeks. That has to do with the amount of things that are scheduled and the other team member's schedules. Marie has been here for a very long time. We can't ask her to come in at 7 in the morning [to plan a unit.] And Roger has a family and works a second job and I'm coming from [a town 40 minutes away.] The only way a good interdisciplinary unit would work for our team, because we have no other time to plan, is if we came in early in the morning or after school. [I don't think it has to do with our level of expertise or experience] in this case it really has to do with time, because I really think all of us are pretty well organized."

[We talk about a lot of activities in our team meetings that

are going to be occurring versus a lot of curriculum. We talk about curriculum a little bit, but mostly it's activities.]

"The team is relatively new and it takes an awful lot of organization. That is something we have not had the time to organize and pre-plan. You will see that if you are with us. [Most of our meetings are spent with student concerns and administrative types of things.] We have to do things like choose the volleyball team for the field trip, chaperones for the field trip, go over lists of at-risk students, call home for progress reports, and then we have three [parent] conferences scheduled this week. They signed us up for cooperative consultation [workshop] during second period."

"Time is probably a very big thing and inexperience. It is very difficult when you're learning how to work within a team and you have no idea what expectations there are. There are two brand new teachers and really it has to do with training and lack of experience. There has to be a desire also to do interdisciplinary. I would love to do interdisciplinary units...but as it stands right now though, there have been too many focuses on the administrative stuff."

"That extra things are added to curriculum. For example, we are asked to do interdisciplinary, but then we are given three or four other things during the year that we have to do too. You have to make a choice. Teaming itself brings with it a multitude of jobs that you have to do. Not teaming, if we were teamed but didn't have all the goodies that go along with middle school

teaming we'd probably have a lot more time to give to our subject and to working on the subject along with other teachers to produce something in the classroom.

But we're working on banners for our Partners in Education. We're working on so many different things that we're asked to do as teams. At team meetings we never talk about curriculum. Never. We don't have the time. We go on duty and then everything that you're doing is all of the little things that they are asking you to do. Then we think, 'I thought we were supposed to be planning' but we don't plan."

- **Team Members.** "Some teachers discourage me. I think they are roadblocks to progress."
- **Attitudes Toward Curriculum.** "We're going through quite a bit and I determined this year that I'm going to get, they told me to get through the curriculum. I'm going to get through the curriculum. I'm task-oriented anyway. I'm very much that way, so if they say, okay you want me to get through the curriculum, I'll get through the curriculum. So that is what we are going to do."
- **Teacher Turn-Over.** "I don't know enough about the other areas to make [curriculum integration] happen. I think with the more years of experience comes a comfort with it and also a better idea of how to integrate. I'm at the point now where I'm starting to get a little bit more comfortable with teaching itself where I can work with other teachers in integration. I read about those other areas so I see where math can apply."

"The team is relatively new and it takes an awful lot of organization."

"Time is probably a very big thing and inexperience. It is very difficult when you're learning how to work within a team and you have no idea what expectations there are. There are two brand new teachers and really it has to do with training and lack of experience."

"It really is a hard thing to do if you have not worked with someone."

The primary barrier to more frequent or more extensive curriculum integration for the Bears was the lack of time and that two of the four teachers were new to teaching their own content area, much less know what the other two teachers were teaching.

The Jets. The Jets named several barriers to curriculum integration, but each member felt that it could still occur, but addressing each of these barriers would enhance the implementation of their units.

- **Teacher Turn-Over.** "It is so hard to talk about our team because Kris and I have been together now for years, but our social studies and science people have constantly changed. That's something that has been hard on us is having the constant turn over on our team."

"Being that this is the first year we're together as a team, I am sitting back more than I...the people that I taught with

year after year...I knew their curriculum. I knew how they taught. I knew what they were going to teach. I've taught 7th grade social studies, but I'm waiting to see how Carl does it. By next year I'll know how he does this and this and I can see how [my curriculum] would fit in."

"Getting to know the people better makes it a lot easier and to know where they're coming from..."

"I think if we could just keep at least the three of us in place it would be great. It has been hard having to have a new social studies and science person all the time."

- **Time and Administratively Assigned Duties.** "Impeding is the time. We're constantly getting interrupted in the middle [of our team meetings.] That's got a lot to do with that."

[Two of our teachers have lunchroom duty during the second planning period and] "that is really a pain in the rear end."

- **Attitudes Toward Curriculum.** Heidi, the science teacher, was very subject-oriented and therefore was less often involved in the give and take nature of curriculum integration across the disciplines. The other team members seemed to understand Heidi's focus. "This team [has] a very interesting combination of teaching styles, from the very, very flexible, to the very, very rigid. We have teachers on this team that are extremely subject oriented. If they can do something within that strict subject matter with the way that they are covering it and that blends in with something else, then, 'Okay, fine."

Heidi commented, "I think that [interdisciplinary units are]

a little contrived. I just don't feel like you always have to have everybody [involved]. I would prefer that [what the other teachers do when they participate in a unit] were something in their curriculum. I think that there are so many things that are a part of the curriculum, why pick something that is not?"

Heidi went on to say, "I feel constrained because of [my science content.] They've had English since kindergarten. Social studies and science are my two favorite. I feel like I'm fighting the battle that they still need that basic content and I can't do as much "out here" as [the other teachers] can. For example, [Mandy] knows they've had nouns and verbs for [many] years now...they are going to get it again next year, but I feel this is the time to get [the life science content] because they won't have it again until 10th grade and then that is all they are going to get--those two years of it."

- **Administrative Support.** [Another thing that has held us back is] "the lack of complete understanding on the part of our top administrator to really understand the soul part of teaming. She doesn't impede, but it is discouraging. That's exactly how we felt the other day when we wanted to go to the nursery [for our team's landscaping project.] We really wanted to do that and we walked away kind of deflated and it really knocked the wind our of our sails."
- **Materials.** Lack of current up-to-date resources here is definitely an impediment.

The Jets listed a number of things which they perceived as

barriers to curriculum integration. The primary concern of the teachers was reconciling the need to address the science content with the philosophy of integrated curricular activities.

Conclusions

The Bears. The Bears occasionally worked on complementary activities, but they were as likely to be working departmentally, resequenced, and occasionally webbed. The concept of loosely coupled systems closely resembles the curriculum activities of the Bears. The difference in the years of teaching experience for the team teachers is significant. The Bears have three teachers with less than five years experience. The amount of formal training in curriculum integration may be a factor, but most of the teachers on the five final teams had either no formal training or one brief experience with formal training in interdisciplinary unit development. Expertise with curriculum integration appears to come from on-the-job experiences with it. As Lisa stated, "It is not anything that I was taught in school." This may change as new teachers enter the field directly from educational institutions, rather than as Lisa and Ryan did through other career areas.

Curriculum integration on the Bears team was not naturally ocurring during team meetings. Bob either prompted the team members about connections or formally scheduled times to talk about curriculum were necessary. Bob and Marie had the benefit of classroom doors opening next to one another and informal

curriculum connections between English and American history were being made partly due to proximity.

The definition of complementary curriculum integration has changed slightly:

> **Complementary:** Related disciplines are brought together in a unit to investigate a theme or issue. Shared planning and teaching by teachers takes place in two or more disciplines in which overlapping concepts or ideas emerge as organizing elements. A team at this level may fluctuate to departmentalized and parallel levels as well as attempt webbed curriculum integration.

The primary facilitator of curriculum integration for the Bears were the attitudes of willingness to integrate the curriculum. The barriers to curriculum integration were that the connections between the subjects were not readily evident to the team members (Bob had to point them out) and team meetings were often used to discuss administratively assigned duties. Since the willingness to integrate the curriculum exists, it is strongly recommended that the Bears take a few minutes each week to discuss future academic plans so that connections can be made across the disciplines.

The Jets. The Jets were frequently working on webbed units. They were constantly talking about curriculum and curriculum integration. Collaboration between Carl, Kris, and Mandy was a naturally occurring activity with no formal plans or agendas used during their discussions. The proximity of their classrooms (all three classroom doors opened within 10 feet of each other) facilitated conversations throughout the day. The majority of

team meeting time was spent on generating ideas for each class. Heidi participated on a limited basis, and although she did not facilitate the process as significantly, she did not actively prevent curriculum integration from occurring.

The original rough definition of webbed curriculum integration with which I entered the field changed: a dichotomy of content-guided themes and high student-interest themes emerged. The Jets did not use an approach similar to Beane's model of student generated themes and problem solving, but they stayed informed about student interests through informal feedback loops and incorporated that feedback into their curriculum planning. Students showed support of the curriculum by bringing in their own belongings to supplement the curriculum. Therefore, the definition of webbed curriculum integration changed:

> **Webbed:** Connections, or webs, are made between curriculum contents and disciplines relative to a productive theme. The team teachers determine the theme. This theme may be content-guided or may be based on high student interest themes as determined by the teachers. In a content-guided unit, the overlaps of the traditional subject area concepts and skills drive the unit. Units based on high student interest themes use concepts and skills to investigate the theme of high interest. Usually, all of the teachers on the interdisciplinary team work together and each member of the team teaches from the perspective of their discipline.

The primary facilitator of curriculum integration for the Jets was the common planning time and the combination of teachers. The common planning time was used to plan the curriculum rather than to organize administrative tasks or to air grievances. The feeling of solidarity between three of the

teachers was very strong. The fourth teacher, Heidi, philosophically was willing to participate, but the perceived constraints of her content limited her participation and thus a less cohesive four-member team exists. The team members recognize the situation and if there is a desire to unite the four members of the team it is recommended that they confront the matter soon.

The possibility of the Jets attempting the next level of curriculum integration using student-generated thematic units (ala Beane) is limited by the teachers' perceptions that the students are not able to generate ideas beyond their own realities. These doubts are not surprising (George, Stevenson, Thomason, & Beane, 1992), but others have worked past these concerns.

The Bears and the Jets

The Bears and the Jets are each working on curriculum integration based on their levels of experience, expertise, philosophies of education, and perceived organizational constraints. Their approaches to meeting the needs of their students differ because of numerous factors.

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